

ISSUE 14

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ZAP



FOR SAM COUPE & SPECTRUM

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Firstly, two apologies. I'm sorry for the lateness in sending out last issue. Now whether you're superstitious or not I don't know. As it was putting last issue together was hindered by all manner of problems. From myself coming down with a very bad case of head flu, our local printer's machines breaking down (and themselves overloaded with work for the Election which caused a delay in receiving our printed issues back) which leads to some of last issue's pages being of very poor quality, which we hope to make amends in future issues and other niggling calamities.

We aim to ensure and promise to all our readership that no issue of ZAT will be late again. To keep this promise, we've made a slight alteration. This should be a MAY/JUNE issue, not a JUNE/JULY issue. So why aren't we covering May? Well since other mags date their issues a month ahead in relation to the month

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Cover by D. Blackburn

to the month an issue is actually released we've decided to do the same. So from now on expect every issue to be despatched available within the last week every 2 months. Continued - I hope not.

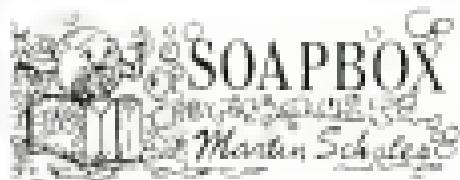
So what's in this issue. Well apart from the regular sections there's an article on how the Spectrum has spread to a worldwide audience of users. In fact this issue is geared towards the Spectrum fraternity slightly more than usual as this issue (in a previous format) represented ZAT at the ZYX92 convention in Cambridge to celebrate 10 years of Spectrum computing. David attended the event and a full report is featured this issue.

Also I'd like to welcome to ZAT the lucky readers who won our free prize via Y6's Fanzine Competition. We're hoping to run more competitions like this in boost readership. Speaking of competitions remember this is your last chance to enter our Manic Miner competition and win a signed copy of the game.

Next issue's Editorial I will be making a "major" announcement as per ZAT. So until then take care and see you soon.

O.B.

D. Blackburn Acting Tech Editor. D. Lindsey
Artwork/PF2 D. Lindsey & P. Shapley Print Master M. Grant Publishing Ltd
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Martin Schlegel

And now for a less than average (?) look at the problem of porn on PD...

Yes, they're all talking about the latest teen "menace". In the '50s it was "horror comics", in the '60s it was listening to pop pirate radio stations, in the '70s it was football hooliganism, in the '80s it was heroin but now in the spotty little males, progressing onto 1990's it is computer porn!

Another media inspired problem swapped for a pile of Batman comics, perhaps? How many of the teenagers who might now be tempted to seek out porn disks only do so because grabby mended, alcohol soaked hands have moved hard-core porn on their decided to turn their purulent attention computers! - Gosh how exciting... onto what is admittedly a problem, but a relatively minor one? - Ablast until the tabloid press and lightweight magazines for bubble brained arheads get hold of it and blow it out of all proportion!

A lot of nonsense has been spouted about the evil pornographers who are can call it that) mention that the spotty spreading porn on PD disks. - Err, hold little kids from the planet Acread are on folder! PD disks should be either free doing out pornography involving or very low cost. People who produce animals. Perhaps the RSPCA would like and sell pornography are in their to investigate these PD libraries, too? business for the same reason that (Animals have enough problems with other people sell, for example, bicycles being gained, hunted, used in They have perceived a market need for vivisection labs, etc without having to certain products and have decided to put up with this kind of abuse) make money supplying these products or services.

People who sell bicycles won't give published magazines and videos away their wares and neither will people who sell pornography. Whether material ripped off in such a blatant we like what they sell or not, way would size. A word of warning to pornographers are after all, business any spotty little heret who is people.

No, the people behind these porn disks are silly little boys who probably will never grow up and who have more high tech computer equipment than is good for them.

I can just picture the scene in some bedroom in - what shall we say? Suburbville, Cor Box, I've just had a mega-brill idea. You know that hard core book you've hidden under the floorboards, why not see if we can digitize it?

That worked, so they started to swap them with their equally brain dead other, "greater" things, digitizing stills from a porn video that they had

swapped for a pile of Batman comics. Then their over-indulgent and unaware (uncaring?) parents splashed out on the necessary equipment to begin having mended, alcohol soaked hands have moving hard-core porn on their computers! - Gosh how exciting... Perhaps various vice squads would like to investigate some of the more blatant PD libraries and remind them that PD Dealer!

But the kicker is this... Where do the porn images come from? From normally, people who have copyright material ripped off in such a blatant we like what they sell or not, way would size. A word of warning to pornographers are after all, business any spotty little heret who is triggering as he posts off or sends

more ripped off porn down the wires. Hard core porn is illegal in Britain. So those who deal in it or produce it are criminals. If (WHEN?) they found out who you are, they may well come round to your house armed with a sledge hammer and a blow torch - one for you and one for your computer. Perhaps you'll get to choose which one they use on you? I sure as hell wouldn't like to be in your shoes, boyz!

Don't forget readers, if you want a chance to air YOUR views, or opinions in ZAT's **SOAPBOX**, or you have an issue you would like to pass to Martin to look into, please write to ZAT at the usual address, which of course is
ZAT

**103 CHILTERN GARDENS
DAWLEY, TELFORD
SHROPS, TF4 2QJ**

ZAT RE-SUBSCRIPTION DRIVE

This issue marks a point where many ZAT readers are due to re-subscribe, as they have now had their full years worth of magazines. To re-subscribe to ZAT, for a full year (6 issues), now costs £7.20 - or £9.00 in Europe. However, as we are fairly kind and generous (if not particularly rich) sorts, we'd like you to feel that you are getting even more of a bargain by taking out another subscription. So, listed below are the benefits that ALL subscribers are entitled to, now and in the future:

- 1) A full year of ZAT! This includes FREE technical help, friendly service, and all that you know us for!
- 2) Discounts on certain items advertised in ZAT. This will include more items in future issues, so we are stipulating to all new advertisers, that they should put a ZAT Subscribers offer, with their product.
- 3) Discounts off all ZAT related services: SAM Quartet, the Spectrum equivalent, Quest Software Adventures, Demas, etc.
- 4) Plus other ideas, still on the drawing board!

**Answer this question correctly when you
resubscribe, and you could win a prize!**

**What was the real identity of former ZAT
Adventure section writer, Andrew Vincent?**

So, just send your nice cheques to:
ZAT RE-SUBSCRIPTION DRIVE (14)
103 CHILTERN GARDENS
DAWLEY, TELFORD

Please make cheques payable to ZAT, and PLEASE list your computer system (Computer/A, drives, printer, memory, misc. interfaces, modems, etc) and interests, likes, dislikes etc.

Don't delay - write today, right away!

Back-chat

BY ANDY DAVIS

Last issue, we introduced the new command called PAUSE. The task of PAUSE is to wait for a brief period, the machine's time after the command determining standard of the language, like the wait period. Beware, as some FORTH-79, FORTH-83, PigForth and computers call their PAUSE command PolyForth. The only slight differences WAIT. Both mean the same thing. Also are that the newer FORTHs have better beware of the number following the commands to process data. These commands, as the numbers aren't commands can be simulated on older seconds. The computer finds seconds versatile by just defining a new very slow, so it works as fifteenths of a command if you're interested in second (or sixteenths of a second in the creating your own customised keywords USA). So 50 50ths is one second, 100 and fractions, then this is for you. 50ths is two seconds and so on. 75 would be one and a half seconds. Using PASCAL is very much a beginners numbers like this means you can begin. It, unlike FORTH, is very considerably half the computer for very much like BASIC, but doesn't feature small, accurate lengths (or shorts) of line numbers. The idea of Pascal was to time. The most common occurrence for teach students to use the top-down a wait period is usually one second (SI), because of programming and to not go leaving around programs with

Let's take a break from programming unwanted GOTOs and GOSUBs. Pascal for the rest of this issue and move centre itself around its procedures and away from BASIC and look at what its main advantages are for graphics else the computer can offer.

99% of all 8 bit computers come with BASIC as standard as it's cheap, easy hefty price tag on them. Also, you've to learn and it's usually bog-standard, so probably noticed that support for utility almost any basic programs will convert software has dropped to around £5 at onto another machine with little from your local store. The only place I can modification (usually sound and find Pascal (The HiSoft version) is from graphics, where all machines differ). TurboSoft. Give them a ring on 0525 377974. You will usually find an

In 1984, a new machine came out on advertisement and price list in Y.S. the market, called the Jupiter Ace. This machine was made by some HiSoft can be contacted on 0525 718681, designers of the Spectrum and looked or by writing to The Old School, unusually like a fusion of the Spectrum Greenfield, Bedford, MK45 5DE. They and ZX-81 in a white case. The major still supply both PASCAL + C for the difference was that it didn't contain Spectrum, and they also supply these and other languages that run under the CP/M Disk system. These MAY work on

FORTH has the advantage of SAI under the new PRODOS system.

customisation and power. You can create your own commands (very much like the PROCedures) and complex programs can be written in just a few lines. Sadly, FORTH is difficult as well as complex for new users. There are no line numbers and programs are run in a top-down fashion. The good thing

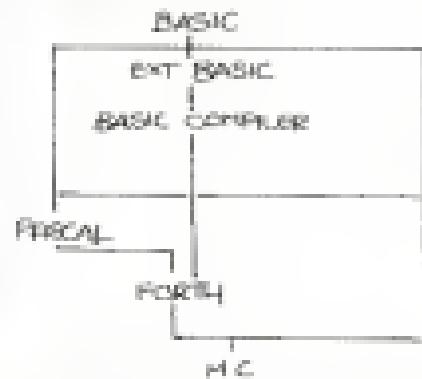
We'll let you know if they do, soon! DL.) around 20k for your program. Some compilers also need an operating routine which needs to read the compiled code and turn it into something meaningful

Stick With Basic:

BASIC is an excellent beginners language and I'd recommend learning the computer well understand. There are quite a few still around. The first BASIC before moving on. But it's slow in Z80, featured in the first few issues of Your Spectrum. This was replaced by Z8K which was available on the Crash Tech Tape. The latter needed an decoding routine to convert the compiled code into code the computer could understand. Modder3 is available to inspect from the Spectrum Software Hire club. You can find the address in AikNews. Then there's Hssoft Basic, in my opinion the best compiler ever. The 48k program takes up only 11k and the code generated can be located anywhere in RAM, even where the compiler is! The 128 compiler is stored in memory and takes up only 500 bytes of normal ram!

The Tree of Knowledge

Here is a tree structure of the logical steps to take when progressing through the language world.



Start at BASIC, if you want to stick with it a bit longer, but would like between 0 and 32768. It also comes more commands and a little more with a comprehensive manual and lots speed, then get an extended BASIC or demonstration programs. The program. An ideal one for the compiler is accessed by pressing both Spectrum is BetaBasic. SAM owners video keys on the 128 to get a menu or have all the features of Spectrum Basic by simple + commands on the 48. (Eg and BetaBasic. Ocean's Laser Basic and =C to compile) You decide where you Scope2 are other examples of extended want to compile your basic by popping basic which are primarily used for in a REM OPEN# to start compiling games writing.

The next logical step is a compiler. This has to be one of the most useful at which the basic is converted to code utilites available. What it does is phenomenal and it finds errors and converts your program into machine bits which can't be converted, like all code! So, no learning code, just write in tape commands and some RESTORE, basic and convert². The only disadvantage with this is that the was £19.99, but ring first to check compiler (which reads your program and turns it into code) may take up Compilers have many pros and cons some vital memory, leaving only and its best to try one first before you

hey. Nearly all will show significant advantages and extra speed it puts into improvements in speed when your programs. If you would like to calculating, but beware, because when you turn into machine code, well, good luck! using graphics commands, meet. The first steps I would take is try and compilers just need them to the ROM buy some old computer magazines from graphic drawing routine which is just when the Spectrum was young, like the same as typing your PLOTT's and Your Spectrum and Your Computer, DRAW's in BASIC. Some compilers

might feature a new drawing system In the early 80's, there were many in their code, but this runs down the good books around published by amount of bytes free for your program Melbourne House, like 'Spectrum and may need a large amount of code machine language for the absolute in your otherwise small compiled beginner' by William Tang (ISBN 0 program. A good way to check the 0804 110 19 or 'Supercharge your speed of your compiler is to use the Spectrum' by David Webb (ISBN 0 'screen move' method.. 0804 112 89 or 'Mastering Machine code

on your ZX Spectrum' by Tom Baker (of Your Spectrum and ZX Computing) First, find 7k of free memory for a screen. If your compiler is stored at the (ISBN 0 90663 23 6) published by IP top end of RAM, then use a low You can't buy these books any more address, like 40000. If, like ZP2, the end are considered quite valuable, but code is at the bottom end of RAM, use check out the competing section of a high address like 50000. But be your local or city library as you'll careful you don't put your screen probably find a copy there. Do the where your program will be compiled to!

When you've arranged a suitable area, type LOAD "CODE xx000" and load in a screen where xx000 is the address where you have 7k of free memory. On Hush BASIC, xx000=30000.

Now, type this short program..

```
10 BORDER 0 PAPER 0INK 7CLS  
20 LET F=6384  
30 FOR T=0 TO 100 (seconds=697)  
40 POKE F,PEEK T  
50 LET F=F+1  
60 NEXT T  
70 STOP
```

On Hush, add 1 ROM OPENE and 80 Sheffield. REB CLOSEE RUN the program in South Yorks standard BASIC and see how long it takes to 'load' in the screen. Now, compile the program and call the Next Month I'll move onto the graphics systems of your computer. If you would like to read more technical data, or at least borrow one to see the

Alchemist Research/Spectrum Support Group
or AlchNews/Spectrum FREE tapezone
62 Tithe Barn Lane
Woodhouse

systems of your computer. If you would like to read more technical data, or at least borrow one to see the

If you don't own a compiler, or then subscribe to AlchNews or read extended BASIC then I suggest you do, MEAN BEZ in this magazine.



PLAYPEN

compiled by
POLLY SHEPPARD

featured every issue. The Editor had been trying for some time to find a willing volunteer to do the job, but no one else but myself wanted the job so here I am. Now let me reveal my secret: I don't play games, neither do I own a games machine in fact I own a Amstrad PCW 8258 now kindly please!

I will only add that I am a secret games fanatic and the PCW prevents me from spending whole days in front of a screen filled with fantastic creatures, facing impossible odds and eating the most revolting things! I was taken to Blackpool last Autumn never again! I spent pounds on a space simulator from which I had to be physically extracted by my fiance after threatening the owner if he dared to turn it off. I cannot count the number of dead and injured throughout the streets as I ledaged bewildered children off simulations of "Space Shuttles" and "Formula One" racing cars.

Games I love them! So you ask how will I be able to handle game reviews? The simple answer is that I do not. As I stated I collate the reviews kindly supplied by other game fanatics who have done and continue to do game reviews for this column.

In this edition of Playpen, my merry band of reviewers have looked over Rainbow Islands, The Match, Hard Drivin' and the latest SAM game Goltz'n'Ballz. Something I want to bring to your attention is this. When we review a Spectrum title has been reviewed on the SAM, we've included a special emblem to indicate that this game is SAM compatible. However some titles maybe SAM compatible even if reviewed on the Spectrum so if for any reason we don't indicate this and you know otherwise please write in and let us know!

The Match (Spectrum) Cult Games

£3.99

Review draft by Stephen Mullen

The review for this game leaves me wondering if food is not more important than the match? Managing a football team must be bad, but playing this game must be a nightmare. The game tackles the problems off the pitch as well as on it. How to afford the best players, ground maintenance and the possibility of a not caused from a lack of piss!

Winning matches is apparently only half the job. Your team must bravely win promotion from the fourth division, taking that a personal reputation can be gained, leading to others from other clubs. If staying with the underdog is your style, then you have the chance to turn them into world beaters.

There is a long line of Football clones for the Spectrum, but the Match is well put together, and not written in BASIC, like so many others. You may scout for talent, improve your ground, sack players, buy piss (sorry), all the usual stuff. The graphics are good and involvement high. What else do you need?

This game comes highly recommended, not as a master piece of programming, but as an addictive and enjoyable game. A bit like pet really.

RATINGS

PLAYABILITY 80% ADDICTIVENESS 87%

GRAPHICS 40% SOUND 80% OVERALL 80%

NOTE: Due to limitations in printing space this page was very difficult to read. To make amends here is the very same intro by Polly and review of The Match as all other pages.

My name is Pauline Anne Sheppard. It is now my task to compile PLAYPEN and the game reviews that are

Hard Drivin' (Spectrum) Hit Squad

£3.99

Review draft by Richard Swann

Driving is a skill that most of us have, but few of us can master. Anyone can drive down to the shops, but try navigating some of the Welsh mountain passes [I've seen a fair few of them] to get a feel of where skilled driving comes into its own. If you haven't got a mountain range next door, this game is the next best thing, or perhaps even better!

Hard Drivin' puts you in the seat of a stunt car racer, with a speed track and a stunt track lying ahead. All you have to do is turn the key, put the car into gear, move off and you're away. You then have to navigate either the speed track [in which you have to go round as fast as possible], or the stunt track [in which you must perform a variety of stunts]. If you manage to successfully complete a lap, you get to race a computer car in a headlong duel.

Of course there are certain hazards to worry about, the main one being crashing. If you veer off the road for too long, the computer will automatically put you back several hundred yards [not a desired thing since there is a short time limit for you to complete a course], after showing you an action replay from an elevated side angle to highlight your embarrassing failures.

The stunt track provides several problematical stunts which you must successfully overcome to stay on the road. First of all, there's the bridge. This is a swing bridge which is half-open. You have to go over it at the right speed so that you clear the gap in the middle of the bridge, but don't go too fast that you become airborne! Secondly is a 360 degree loop-the-loop. Here, you have to go as fast as possible if you want to stay on the obstacle! Thirdly there's the problem of negotiating a very steep downhill bank, too fast, and you'll launch into the air and crash, too slow, and you'll run out of time.

Any mishaps you may have with these obstacles result in going back before the obstacle, requiring you to try again, and thus losing time.

The original arcade game coin-op features a cow on the road, but I can't say I encountered any four-legged obstacles as I went around.

The graphics for the game are great. Obviously "borrowed" from the Freescape games, they feature a full 3-D view through the windscreen. Furthermore, the action replays are shown from a third person's point of view with equally strong animation of the car. Certainly watching the car loop-the-loop both inside and outside is well worth watching. And unlike Freescape, the graphic frames are updated fast enough to give realistic real-time motion (which wasn't as important in the Freescape games).

The main fault with the game is the control method. The arcade machine was highly responsive, but because the controls were layed out in the same way as a car, you'd expect it and be able to drive in a relatively straight course. On the Spectrum, things work very differently. Pressing right turns the steering wheel right, while holding it down turns it more strongly. Naturally if you want to stop moving right, you have to counteract the movement by feeding back the steering wheel to the centre. The same is true for the Spectrum controls, but it doesn't seem right when you're using two keys to control the car, rather than an analogue input such as a steering wheel.

I held down right and the car jerked left. Then I held down right to counter-act the counter-motion, and go on ad infinitum. Perhaps a diagram of a steering wheel with the position of your hands marked [such as that in Test Drive] would have been a good idea, or an idea of using the top row

representing "left" and "right" to varying degrees, and by resting a soft-clipper in between the "5" and "6" keys the feeling of a steering-wheel would be given. As it is, I'm afraid the great graphics are ruined by the unsuitable control methods.

The only other complaint is the sound which is totally absent on the 48k and an annoying drone on the 128k.

All in all, I think this game looks great but play it and you'll end up getting very frustrated. However I must say that this made the game addictive in some respects.

Comedy

RATINGS

PLAYABILITY 55% ADDICTIVENESS 83%

GRAPHICS 80% SOUND 35% OVERALL 63%

Rainbow Islands Spectrum Hit Squad
£3.99

Review draft by Richard Swann

This is definitely one of the best Spectrum re-releases I have seen yet. In case you didn't know, the game received rave reviews from all magazines and was listed highly in the top 100 games in both Crash and Your Sinclair. But has time been good to the game? Read on.

The game consists of seven islands, each divided into four rounds. The object of each round of the game is very simple - just get from the bottom to the top of the screen in as short a time as possible. This would be easy were it not for the fact that there are lots of nasties patrolling each level. Fortunately you are armed with an endless supply of rainbows, which can both kill these creatures and provide extra platforms for you to make your way to the top level. You'll have to hurry though, because after a short time the water level at the bottom of the screen starts to rise, and you'll drown if you don't make it to the top in time!

If you can trap a baddie inside a rainbow, you can be awarded with special options such as extra speed, quicker rainbow throwing and multi-rainbow power. You'll probably need all three to overcome the gigantic guardian at the end of every island.

The graphics and gameplay are both excellent. Colour is used effectively and without any clash at all. The characters in the game are all well animated and there is good 12lk tune as well (although this gets annoying after a while). Even when many characters are on the screen at one time, it is still easy to distinguish who's who. The game is simple to get into, and extremely addictive, because you always want to know what happens next. I would however recommend using the keyboard, as jumping using the joystick can cause some problems. There is no option to define keys, but two possible layouts are selectable.

If you haven't already got this game, rush out and buy it because it is just as good now as when it was first released!

RATINGS

PLAYABILITY 87% ADDICTIVENESS 87% SOUND 85%

GRAPHICS 85% OVERALL 85%

Whatever the computer, there are a number of arcade classics that exist in one form or another on it, such as Space Invaders, Pac-Man, Asteroids, and of course Breakout. The Spectrum has had a multitude of great (or should that be smashing?) Breakout variations: Arkanoid and Bally, to name but two. However SAM has had none... until now!

For those of you who have been on the planet Zeng for the past 10 years, here's the basic idea. You control a bat by pressing left or a right button. You bounce the ball off the bat, preventing it from hitting the bottom of the screen and attempt to smash all the bricks at the top of the screen into smithereens!

Balls n' Bells has been programmed by SAM "Tetris" programmer David "Lord Insanity" Dommersen and his fellow members from "The Lords" PD team. It is his first full-price release, and hopefully not his last!

As with many of the newer versions of Breakout on the Spectrum, BnB also features "seasides" which put gel in the way of the ball and bricks that drop "goodies". The goodies include lasers (ie blast away the bricks), and level icons (ends each level), a cushion (to allow the ball to hit the bottom of the screen), multiple balls, extra lives, extra speed, etc. However, also included are items to kill you instantly and to reverse your movement.

BnB has 100 levels to tempt you with, but also features passwords so you don't have to replay all the levels again when you get killed. However, every six screens, you have a bonus round to solve that will give you extra points but it isn't easy to solve! A nuclear shock occurs every 20 screens but I won't spell it for you!

BnB has great graphics, smooth gameplay, and pretty decent sound. (It also has a also has a pretty decent cover, but I won't increase Darren's ego by going on about it!) It also works with SAM mouse, and is (apparently) much better for being played with it. All in all it's another excellent release from Revelation so buy it and get "batting"

RATINGS

| | |
|----------------|------------|
| PLAYABILITY | 91% |
| ADDICTIVENESS | 82% |
| GRAPHICS | 80% |
| SOUND | 84% |
| OVERALL | 85% |

That's it for this month. Next time there will be a review of Astroball, which as you may know is Gameco's first Spectrum game release (the SAM version is available soon), and which has fantastic review ratings in the main mags.

Glancing through the news pages, the games that I think are also best buys at present are Midnight Resistance, Puzzles, Castle Master (reviewed way back in ZAT 3), and the Spectrum version of Escape From The Planet of The Rebel Monkeys. All of these are by the Hill Squad and all retail at £9.99.

Well, I hope you enjoyed this edition of Playpen, take care and I'll see you all next time. P.S.

PUBLICA DOMINIUS

By Mike A.J & S Muller



detailed reviews of The Sound Machine, Enceladus 8, Void and SAM Supplement II. As far as the slideshow is concerned, 2 pictures stood out from the standard ST-parts - one from Shadow of the Beast, and a detailed but rough digitized shot of a Praktika camera.

This issue sees a welcome return to hot the highlights of the disc are to be ZAT's PD column. However, due to found in the EXTRA section, first is David's new commitments with SAMCo, SIGNAL 3 - a 4 part music demo, SAM Demo Master Mike AJ has stepped ported from the Spectrum (European to take the reins of the SAM side of text). Then there is TETRIS 2 by The this column. The Spectrum side is being Golden Triangle (music by Frantisek taken care of by David just for the Paks). It has a simultaneous 2-player option, superb 'Voxbox' in-game music and normal and wave modes (eg get 10

Yes, that's right, Mike AJ is now the man, survive 20 seconds etc). This writer for Publica Dominus. Being a PD game is on a par with Lord Inquisitor's producer myself, I know how much original masterpiece, and is far better (and how little) work is put into a (especially on competitive 2-player program. Have you noticed how mode) than most full-price games. Also practically all software, PD or in EXTRA are DA COPPER 2, a disc otherwise, seems to receive over 20% copy which needs MasterDISC and as an overall rating? Well, this column BALLS 2, relating talk which make is going to be different - I shall be lovely patterns (as in Enceladus 8) reviewing PD by the standard ZAT ratings (graphics, sound, presentation. Also on the disc are 3 sample demos, testability and overall) plus two others each about 10 seconds long and don't originality and technical achievement need a sound sampler attached. But the Don't be surprised to see scores less quality is poor, and the samples weren't than 30%

expertly timed

Firstly, I would like to give a new disc Overall, PUBLIC 2 is an absolute mag "PUBLIC" 8 mention. Yes, I know bargain at £1. if only for TETRIS 2 the SAM already has more than its Graphics are fairly standard throughout fair share of good disc-based mags (and (and SCREENS are compressed), with many bad ones), but I think Public sound being very good from SIGNAL 3 stands out from the latest releases and TETRIS 2. The presentation is Here is the review of PUBLIC 2: mediocre, but will doubtless improve (remember FRED 29) with more

On boot-up you are presented with a contributions, PUBLIC looks set to screen which has been turned into a become the next FRED 2a, to the sphere by an Enceladus routine scores.

Unfortunately, the effect isn't totally convincing, since most of the text has GRAPHICS: 55% (some nice stuff, but become mangled. Now onto a nice some poor ST-parts standard menu (a like FRED) with all SHINDY: 70% (original tunes in SIGNAL the usual options. The NEWS section 3 and TETRIS 2) was quite refreshing written in a PRESENTATION: 80% (no use of chalky style. REVIEWS featured graphics except the menu)

LASTABILITY: 80% (TETRIS 2 is just as addictive as TETRIS)

ORIGINALITY: 40% (looks very reminiscent of FRED)

TECHNICAL ACHIEVEMENT: 50%

(besides the EXTRA action, nothing worth mentioning)

OVERALL: 80% (outstanding value for money, with a superb game. Buy it!)

PUBLIC is produced by Sam Buchanan with contributions from Thorsten Gudmundsen. Contact Sam at PUBLIC, 8 Southmere Drive, Burridge, Marlborough, Wiltshire SN8 3TG.

And now, it's back to David!

Thanks Mike. Well, since my outburst several issues ago, when I was getting rather irritated over the lack of overseas action I have been forced to swallow my words yet again! This time, it's down to Tim Kemp ...

As many of you know, Tim - as well as being Adventure Columnist for YS - also runs a Spectrum Adventure Spanish company, Investronica. At the related magazine, From Beyond. However, did you also know of From Beyond PD?

FBPD (for short), has a range of desire for technology. All the games cost a mere 99p (plus stamp) - as good as ever, but in fact, Sinclair including multi-part games! When you consider the price of tapes, plus the collapse, and as a consequence, the deal clear Mac-Printed covers the games period up Sinclair's business position come in, that's pretty cheap indeed.

A full review of some of the games available, will appear in Mind Games Spanish 128K Spectrum which appeared within a few issues. But in the meantime, contact Tim for more joint effort programme between the two details ab

36 Mole Place, Norwich, Norfolk, NR2 2ZQ.

However, from what I can tell, PB are manufacture and distribute it there. It the only people producing PD was only until importing costs had been sorted out, that the machine was If you know any different, please let released here in March 1986. ZAT know,

The Wonderful World Of The Speccy!

By Richard Swann

The Spectrum doesn't have much of hold of the British market anymore, off the Spectrum, which is a great shame, and perhaps due to the fact that the SAM isn't as nearly as well known as I have hoped it would be by now.

Fortunately, there appears to be a large market for the Spectrum abroad, which may seem rather odd, but is great news for British Spec-chums desperate for some new action on their machine.

The best countries to find some action have been Spain, Russia and South America. The connection with Spain has a lot to do with Sinclair's market plan, which

as being Adventure Columnist for YS - also runs a Spectrum Adventure Spanish company, Investronica. At the related magazine, From Beyond. However, this was a wise deal, as Spain did you also know of From Beyond PD? computers of any description, due to its

desire for technology. All the the deal (mid-1985), Sinclair's sales were games cost a mere 99p (plus stamp) - as good as ever, but in fact, Sinclair including multi-part games! When you consider the price of tapes, plus the collapse, and as a consequence, the deal clear Mac-Printed covers the games period up Sinclair's business position come in, that's pretty cheap indeed.

As a consequence, the Spanish market were treated to the Spectrum before the British were, due to the ability to

manufacture and distribute it there. It the only people producing PD was only until importing costs had been sorted out, that the machine was

been released here in March 1986.

As a result, there is a lot of Spanish Software about. Most of the Spanish As a consequence, there are millions of software that finds its way across to Spectrum circles in Eastern Europe. The the UK has come from the software most heard about is a device called the UK has come from the software most heard about is a device called house Dynamix. Dynamix's first games "The Hobbit" (named after one of the appeared at the end of 1986 in the UK best Spectrum adventures of all time, on various labels, before moving to perhaps?), which has the same sort of Ocean, and later establishing a UK base Spectrum sublabel, but has as far with Electronic Arts as distributors. Hi! superior keyboard, VDU and a disk games include West Bank, Army drive interface as standard. I wonder if Moves, Game Over, Freddy Hardest and Russia will sell "The Hobbit" to the UK Games. The only trouble with Dynamix like the Soviets?

Games is that they're hard to distribute. hard. In fact, pretty damn impossible. The lack of Spectrum games and of most of them. I remember being stuck computer games in general in Russia as screen one of Army Moves for so long that they had to write their monthly, until I worked out how to build own - and they did. The most famous the game! You'll still find a lot of examples, of course, in the bestseller Spanish Spectrum groups floating TETRIS, but there are plenty of other around.

Russia, however, is a totally different kettle of fish. In Russia, there were no

copyright laws if you wanted The South American connection is something you couldn't get, you could similar to the Russian one. There are a simply copy it. So the Russians denied lot of South American Spectrum users to embark on mass-production piracy, however, due to the lack of availability all perfectly legal, much to the dismay of software, there is an enormous of US software houses who were kept anyway of piracy. Incomplete and in the dark about it all the time. unavailable programs can be bought for the equivalent of £10 in some areas of Brazil. Sadly, most South American Russians went out and built circuit just can't yet obtain copies of software, boards of popular computers. The BBC is piracy is everywhere. Osborne and Mars available in the US were just remarked that if you tried to write to far too complex to rebuild, and the British software houses, they just expensive to obtain, so they went off wouldn't send tapes to South America and copied a cheaper computer, which due to the piracy. This simply reduces just happened to be the Spectrum. As a result for the software houses, surely?

But it didn't just stop at tapes. The Brazilian market, most South American Russians went out and built circuit just can't yet obtain copies of software, boards of popular computers. The BBC is piracy is everywhere. Osborne and Mars available in the US were just remarked that if you tried to write to far too complex to rebuild, and the British software houses, they just expensive to obtain, so they went off wouldn't send tapes to South America and copied a cheaper computer, which due to the piracy. This simply reduces just happened to be the Spectrum. As a result for the software houses, surely? result, the Spectrum is one of the most popular computers in Russia, and The South American Spectrum market Poland as well. (YS quote "Good old made its mark with STK, a Spectrum Poland. We're always getting letters mailed recently released on a 16 colour from Poland.") The Polish connection is Tape.

similar to the Russian one, with the added extra of the Spectrum and Your Go, with the word running closer Sanger being heavily advertised in a together, perhaps we British can get Polish magazine "Bytek" (Pronounced our hands on some of the remarkable "Bi-Tek", this is possibly THE computer achievements of Polish software magazine in Poland - with no direct equivalent with any of the UK's games-oriented press! Bi-)



Despite being heavily advertised and promoted through-out the Spectrum & SAM world, the overall response to the planned "mega-event" that was originally to have been held on May 2nd, was not very well responded to by the public. This was mainly due to the location of the venue, date chosen, ticket pricing, and the fact that the promotional material seemed to gear itself more towards people who had made a "landmark" in the Spectrum scene.

But, for the people that did want to meet and talk, the organisers had set up a "mini-event", held at a smaller venue, and it was this which ZAT's intrepid reporter (me!) visited on May 2nd. Due to the revised and smaller event, several of the noted people originally due to turn up were not able to. These included Mel Croucher, Sir Clive, and the infamous Pitman (Who Altac was on show here,

has returned, once more, to his base-estate in France).

The informal "get-together" was held in a reasonably sized room in a Cambridge pub (although unfortunately, my financial situation prevented me from sampling the wares at first hand). Present, were Dr Andy Wright, Simon N Goodwin, Nev Young (FORMAT Writer, and boss of SD Software), Steve Nutting, Alan Cook and several members of the public. Arriving later in the day were Jon Piller and Bruce Gordon.

The day featured a number of interesting items. Spectrum Emulation was featured strongly, with several computers running Spectrum Software. This included

a QL running "Cyberzone" - although rather slowly (S N G mentioned that with a QL with the "GoldCard", it ran much the same as a Spectrum)

an Amstrad 4020 PC running "The Birds and The Bees 2: Antics" (graphics by Matthew "Mosaic Miner" Smith, for fact fans!), which again was fairly slow, but after all this PC does use a chip which is only about as powerful as a 280, and isn't overly fast! With a 286 driven PC, it would have been much faster!

an Amiga also made an appearance! It ran both its own Spectrum Emulator, which wasn't too fast. Additionally, it ran a QL Emulator, running a Spectrum Emulator, which was about the right speed! The "Ultimate" classic,

Quest Software

The new name in Spectrum and SAM Adventuring!

For more details, please send an SAE to:
10 Westerkirk Drive, Madeley, Telford, Shrop., TF7 5RL.

An Amstrad CPC 6128, was also on display, and ZAT donated a selection of show, running a sample demo written in back issues. A quick program in Spectrum Basic. The CPC emulator was *behAVASIC* by Andy Wright, had been written by Andy Wright, and is draw numbers displayed in a apparently only 10K slower than the super-large size Steve Nutting walked Spectrum. However, it will only allow away with a couple of Zenith titles, and 10k games, due to lack of memory I ended up with one myself under emulation.

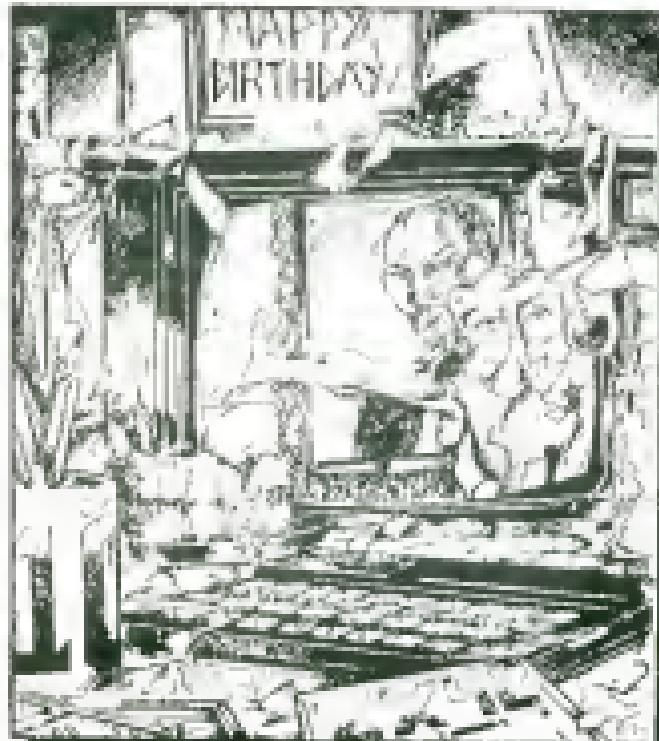
and of course SAM was there, running interesting items to show Paul King, a Android 1, and various other classic dedicated Spectrum user, showed some titles - naturally enough, SAM is much circuits he had designed using a faster at Spectrum simulation than the Spectrum PCB designer. Also Paul was other machines on display!

Some of the visiting people had showing some great DTP fonts, designed by an Italian user, which I can't wait

One of the other highlights of the day, to buy! Another user showed off his was the music Simon Goodwin played own alternative Spectrum ROM - various pieces of music throughout the complete with about REHUMPH day - some of Automata's "wacky" command and fancy font! I showed a material, some Spectrum created music, few people Daniel Cannon's great Tetris and some using the computer's MIDI styled game - Little 2. This impressed facilities. Quite a range of material! quite a few people!

Although Sir Clive didn't show up, an Jon Pilar rounded off things, with a ex-Sinclair man, responsible for most of the original Spectrum advertising material, did show up. He mentioned several interesting tributes, such as the fact that originally Interface 1 was going to be built into the Microdrives directly, rather than existing as a separate interface.

Towards the middle of the day, there was a prize draw. Most people who had turned up had donated something. Simon donated a copy of an old DK'Tronics title he'd written (oldman on SU a few months back), Zenith Software - although not physically there - had donated several



group photo, which should appear in YS, for Spectrum upgraders with low (The bad news is that I'm in it!) Simon incomes, to afford to buy a SAM. Goodwin also revealed what had happened to Plus Technology: the To coincide with this new model, a ex-Sinclair team, once responsible for range of cassette software has been RAM Print" printer interface, RAM planned by Format Publications. These Music Machine, RAM Turbo" joystick will include Spectrum tiles - used via interface, and surely the Konix the emulator, and SAM tiles. multi-system (a potentially Contact SAMCo on 0992 700000 for earth-shattering console, once based more details. around the Z80). It seemed that they still exist, but now the wonder-chip that once would have been the heart of a console, now beats inside After the long wait for a SAM Music Box-armed bandit!

New music package!

All in all, not a bad day. The only second music package shortly. The thing that spoiled it for me was the package, ETracker, has been written by endang. When a combination of British "ace" Coach programming team, ESI, Reid and myself, ended up with me being stranded in Leicester until 3am in ETracker boasts full control over the the machine! What a day!

Although the event ended up being music program on 34M Coupe, and the track smaller than originally planned, based on any 8 bit computer*. After another event in a much better, bigger, using a pre-production version for a cheaper version has not been entirely few weeks, I can't argue with that! *cited out

A. M. S. SAWYER

SAMCo have released details of the latest addition to the SAM family, the new GameStar pack, which is priced at a mere £99.99.

ESI are also responsible for a well-known music package, Sound Tracker, on the Spectrum. Perhaps SAMCo may release this one as well?

Polygonia clevelandii

Astroball, SAMsoft's first Spectrum GameStar, is a package which has been released, seems to have done pretty well designed to promote SAM as an in a recent YS, after gaining 90%? The alternative to the comedies currently SAM version is also now ready around, but an alternative that can grow into a more powerful computer Revelation have also got another system. It consists of a SAM 256k, an Spectrum title by the same improved Spectrum Emulator (from 3D programmer in the offering, Astroball Software). 'associative' membership of the Turbulence, has been described as INDUS (access to the helpline service, being either an "odd" title - but a good for period), some cassette software, and game never-the-less Astroball will be a start: mentioned.

As upgrading it to a full spec SAM 512 costs only £79.99 for a drive, and £25.99 for memory, it is a valid way

It's nearly finished!

is almost ready! Anyone who has paid label, responsible for Microfar Madness for a copy will get theirs before the - which was recently given an end of June. If you don't get yours by excellent review in Your Sinclair, then, drop me a line via Quest.

The disks, "Delbert's +D Disk Delights" featured on SQ22 is another great game volumes 1 & 2, feature by Daniel Carter, an example of Guy volume 1 Diamond & Bertrude, Aun Middleton's Terminator 2 demo (which Velma's Coming to Tea, Brian and The thanks to a great compression program Dashed Politician, and Andy Davis's from Daniel, has been cut from over *Aktr-News* 2, 250k, to just over 100k!, a selection of volume 2 Star Flows, Raymond digitized graphics, some music from the Pringle's Quest For The Fabled Jar Of great new Music package Etender, and Pickled Cabbage, and Microfar Madness some Archimedes graphics - converted (40 & 128 versions) to SAM by Daniel.

Printing problems...

Unfortunately it seems ZAT's printer, Spectrum titles will appear on +D disk, has been forced to increase his printing and cassette. Cassette versions are rate. However, due to our forced price provided by DTHS, SAM versions will increase a while ago, we have managed to swallow this increase with only one casualty - we are now forced to stick to 32 pages, except for the occasional special issues.

To counteract this, we intend to pass material to Andy Davis's tapezine PIMan - is planning to make a return *Aktr-News* that may not have fitted to the screens of the Spectrum, and his into ZAT. Likewise, SAM specific items first appearance on SAM!

This shouldn't effect ZAT's content to seem making an appearance on the any major degree, and further Amiga. In the title "Aurmanea", but subscriptions will enable us to return to apparently he has made plans to 36 pages. A good incentive to get your appear on more familiar territory at friends to subscribe, don't you agree?

Quest ... ready now!

At the time of writing Quest Software, David's new Adventure label, is only Colin Jordan's SAM Adventure System, weeks from releasing it's first designed to aid Adventure Spectrum title. The game, Doomsday, programmers with Adventure creation, was written by Enceladus games - is due for release on June 1st. Graham Burienshaw - and is best described as being rather "controversial"

Quest are also responsible for 2 new method, which makes programming compilation disks, featuring games from much easier. More details, and a review the "Delbert The Hamster Software" or preview, next issue.

The disks, "Delbert's +D Disk Delights"

Featured on SQ22 is another great game volumes 1 & 2, feature by Daniel Carter, an example of Guy volume 1 Diamond & Bertrude, Aun Middleton's Terminator 2 demo (which Velma's Coming to Tea, Brian and The thanks to a great compression program Dashed Politician, and Andy Davis's from Daniel, has been cut from over *Aktr-News* 2, 250k, to just over 100k!, a selection of volume 2 Star Flows, Raymond digitized graphics, some music from the Pringle's Quest For The Fabled Jar Of great new Music package Etender, and Pickled Cabbage, and Microfar Madness some Archimedes graphics - converted (40 & 128 versions) to SAM by Daniel.

For more details of these, and other titles, a nice SAE should be sent to the address on the Quest advert. All Quest

The return of the PIMan?

Rumours have been abounding that the most infamous character in Spectrum adventuring history - the nefarious

adventuring history - the nefarious PIMan - is planning to make a return *Aktr-News* that may not have fitted to the screens of the Spectrum, and his into ZAT. Likewise, SAM specific items first appearance on SAM!

The big-nosed one has recently been appearing on more familiar territory at some time during the year. More details as we get them!

Send in the SAS!

At the time of writing Quest Software, David's new Adventure label, is only Colin Jordan's SAM Adventure System, weeks from releasing it's first designed to aid Adventure Spectrum title. The game, Doomsday, programmers with Adventure creation, was written by Enceladus games - is due for release on June 1st. Graham Burienshaw - and is best

described as being rather "controversial" The system is packed with features, to say the least. and is operated via a "window" styled

ARCADE ALLEY

Richard Swann & Co

Hello there, welcome to another dose of hints, cheats and POKEs for you all to enjoy. Before I start, I hope to have some POKEs for the SAM written soon, so I'll print them as soon as I get access to a SAM.

HOW TO USE POKEs:

POKEs are simple cheat routines which consist of a few lines of BASIC. When RUN, they load the game and activate whatever cheats are present.

Simply type in the listing exactly as it is printed. In particular, pay attention to the numbers in the DATA lines because they're easy to get wrong. You must make sure you've typed in exactly what's printed, otherwise the HOME won't work!

When you've typed out the POKE, it's a good idea to save it to a blank tape, so you can simply reload it when you want to cheat.

With your POKE in memory, you type RUN and press SHIFT. Insert your game tape from the start and press PLAY on the cassette recorder. Wait until the game loads, then cheat away!

Some POKEs do a variety of things. In this case, the REM statement after each line refers to what that cheat that line will change. If you don't want that cheat, don't type out that line. At the end of the listing, there will be a line called END MARKER. You MUST type this in, regardless of what cheat's you're using, otherwise the POKE won't work!

DEATHCHASE - infinite lives and immunity

10 REM DEATHCHASE BY RICH

```

10 FOR N=12584 TO 319
20 IF A=999 THEN READ APOKE
30 NEXT N
40 RANDOMIZE USR 12584+6070 40
50 DATA 271,38,0,84,17,72,83,82
60 DATA 250,20,27,78,88,5
70 DATA 175,50,95,102,REM LIVES
80 DATA 62,200,50,2%,100,REM
90 DATA 200,999,REM END MARKER

```

3D LUNATTACK - Infinite lives

```

20 MESEL "2POKE (PEEK
23677+2%)+PEEK 23638)+31,201,6070
30
300 POKE 5,1249,0,7090,1,PEEK,
7,16,7+2%+PEEK 23638)+31,205,
RANDOMIZE USR 0,PEEK,
7,16,7+2%+PEEK 23638)+31

```

CHASE HQ (Budget release) - infinite credits and turbos

```

10 REM CHASE HQ BY RICH
20 LOAD "CODE"
30 POKES 4,2562,2%9
40 FOR N=46780 TO 319
50 IF A=999 THEN PUKE N,NEXT N
60 RANDOMIZE USR 42426
70 DATA 39,14,2%,17,0,6,1,30
80 DATA 0,217,176,195,1154,62
90 DATA 195,70,48,91,31,14,84
100 DATA 24,49,96,195,0,93,33
110 DATA 223,721,34,49,91
120 DATA 62,(82,50,82,156,REM
4,PEEK,
130 DATA 17%,50,165,17%,REM TURBOS
140 DATA 201,999,REM END MARKER

```

BMX SIMULATOR II - Infinite time. The POKE will automatically detect whether you are loading side A or side B, and alter the POKE accordingly.

```

10 REM BMX A BOTH SIDES BY RICH
20 CLOAD "CODE"
30 FOR N=1,2584 TO 21020
40 READ APOKE N,NEXT N
50 RANDOMIZE USR 23226
60 DATA 271,38,0,84,17,72,83
70 DATA 62,200,50,2%,100,REM
80 DATA 48,241,71,23,91,34
90 DATA 11%,91,195,0,95,33
100 DATA 330,201,34,91,32%
110 DATA 195,0,96

```

TRAILBLAZER - infinite time and jumps

Original version

10 REM TRAILBLAZER GREMLIN BY RICH
20 LOAD "CODE"
30 POKE 60002,743
40 POKE 60001,236
50 FOR M=602,603 TO 129
60 READ A#P A~999 THEN POKE
N,A#NEXT N
70 RANDOMIZE USR 60000
80 DATA 175,50,83,199,19M TIME
90 DATA 175,50,242,138,19M JUMPS
100 DATA 195,0,132,999REM END
MARKER

Budget Re-release

10 REM TRAILBLAZER MASTERTRONIC
BY RICH
20 FOR N=23296 TO 329
30 READ A#P A~999 THEN POKE
N,A#NEXT N
40 RANDOMIZE USR 23296
50 DATA 221,33,203,92,17
60 DATA 163,0,67,255,25,205
70 DATA 85,5,88,241,13,24,91
80 DATA 34,254,92,195,222,92
90 DATA 175,50,183,136REM TIME
100 DATA 175,50,242,138REM JUMPS
110 DATA 195,0,132,999REM END
MARKER

BUGGY BOY (Budget re-release) - Infinite lives

10 REM BUGGY BOY BY RICH
20 LOAD "CODEPOKE 605,37,255
30 FOR N=605,260 TO 6500
40 READ A#P#CPOKE N,A#NEXT N
50 RANDOMIZE USR 60468
60 DATA 62,24,50,27,1,31
70 DATA 195,0,136,84,85
80 DATA 82,86,79,32,83,85
90 DATA 67,75,83,33,30,30

SPACE 7 - Infinite lives

10 REM SPACE 7 BY RICH
20 CLEAR 24514LOAD "CODE
30 FOR I=522,50,5227,21
40 FOR M=23296 TO 23303
50 READ A#P#CPOKE N,A#NEXT N
60 RANDOMIZE USR 65156
70 DATA 33,9,91,114,25,2,97
80 DATA 195,104,97,33,160
90 DATA 195,114,177,198
100 DATA 195,0,295

TECHNICIAN TED - Megashark

(WARNING: Don't try and walk to time
places which you normally can't get to,
otherwise strange things happen.)

10 REM CHIP FACTORY BY RICH
20 FOR N=23296 TO 329

30 READ A#P A~999 THEN POKE
N,A#NEXT N
40 RANDOMIZE USR 23296
50 DATA 221,33,203,92,17,224
60 DATA 247,244,136,205,84,5
70 DATA 48,241,62,195,50,146
80 DATA 85,33,24,33,34,14,7,97
90 DATA 195,21,95,62,201,50
100 DATA 165,99,53,13,11,14,7
110 DATA 95,82,135,50,129,17
120 DATA 36,76,94,14,194,731,33
130 DATA 107,5,201,86,195,50,90
140 DATA 140,173,72,81,34,80,140
150 DATA 70,188,72,189,6,7,140
160 DATA 35,24,91,34,178,172REM
LIVES
170 DATA 175,50,114,171REM TIME
180 DATA 62,10,50,117,186REM
IMMUNITY
190 DATA 175,50,95,196REM WALK
THRU WALLS
200 DATA 195,101,170,195REM END
MARKER

SPLIT PERSONALITIES - Infinite lives

10 REM SPLIT PERSONALITIES BY RICH
20 FOR M=645408 TO 67451
30 READ A#P#CPOKE N,A#NEXT N
40 RANDOMIZE USR 65408
50 DATA 241,49,295,295,271,31
60 DATA 25,360,17,273,7,42,255
70 DATA 55,205,86,5,49,241,205
80 DATA 128,262,221,13,0,84,17
90 DATA 127,161,23,67,3,2,34
100 DATA 125,212,195,2,70,205
110 DATA 125,212,195,2,70,205

TOOBIN' - Infinite credits

10 REM TOOBIN' BY RICH
20 FOR N=24480 TO 24512
30 READ A#P#CPOKE N,A#NEXT N
40 RANDOMIZE USR 24480
50 DATA 221,33,203,92,17
60 DATA 156,1,62,175,50,205
70 DATA 286,5,48,241,13,584
80 DATA 95,38,4,1,94,195,217
90 DATA 301,13,10,14,24
100 DATA 241,185,0,120

END

Sorry, that's all I've got time to write
for this issue. Don't despair, because
there'll be more hacks and cracks next

Meanwhile, why not write some POKEs
yourself, and I'll do my very best to
print them.

CHIPSHOP

Compiled by David Ledbury

Another issue is upon us once again, and with it brings yet another journey into the technical world with Chipshop. Due to this issue's features, we are only mainly concentrating on the next section of Daniel Cannon's Machine Code Tutorial series, although all the usual favourites will be back next time.

Don't forget, if you've missed any issues, then we can supply copies of back issues for a reasonable fee. Just write to the usual address for more details.

However, for those of you still working in BASIC - whether it be BetabASIC on the Spectrum (Available from BetaSoft - address hopefully somewhere in this issue) or in SAM BASIC - we are currently hoping to get permission to use program listings from Doctor Andy Wright's BetabASIC Newsletter, which should be quite interesting! More about this when we've got it all finished.

But for now, it's back to Daniel ...

CODE BREAKER by Daniel Cannon

Reading the keyboard: First a few explanations (as always): 50 times a second, the ULA (or ASIC for SAM) inside your computer tells the processor to interrupt. At this point, whatever the processor is doing, a RET \$6 is done. At address \$6 is a routine which tells the computer to read the keyboard, update the timer (a system variable at addresses 23672 to 23674), and (if you read it's code at address 23560, have a SAM) a few other things. At

the end of the interrupt routine there is a RET instruction which returns back to the program interrupted, as if nothing happened. The upshot of all this is that we can be sure that the computer will store the result of any keyscan if it takes the trouble to read the keyboard 50 times a second.

In the next few programs which detect keypresses you must quit the program by holding down Enter (or Return) to display the "Scroll?" message, then press N. The computer will report an error to say that you didn't want to scroll, and then return back to BASIC. Can you find a better way, say by pressing a certain key, to quit?? Try the CP instruction.

First the Spectrum. At address 23611 is a system variable called FLAG5. Bit 5 is used to check if a key has been pressed (bit 5 set) or not (bit 5 unset). Unfortunately, other bits in the same system variable are used to store other information, so you have to find a way of reading this bit whilst ignoring other bits. This is where the BIT command comes in. First we point HL to the address with the bit we want to read, and use BIT SJHL). The processor will check bit 5 of the address pointed to by HL, and return either Z (reset) or MZ (set). We can then act on this information. You can check all the BITS (from 0 to 7) and most registers (A, B, C, D, E, H, L) as well as (HL).

If the answer is zero (reset) then there has been no key press, so we must wait for a keypress by jumping back. If there has been a keypress then we



Next we must say that we have read zero flag set to 2 if no key was pressed, or NZ and the code of the key pressed in the A register. Look at program 2 for an example of how to use this, and compare it to program 1. (It sounds strange, but try omitting this instruction to see what happens). RES stands for reset and it resets a bit, it can use the same registers as the SET command. SET also understands the same registers, and you can have a guess as to what this one does.

Try program 1 to see this in action:

010 ;PROGRAM 1: Spectrum keyboard read.
020 ;Start 32768, end 32787, length
20.
030 ORG 32768
040 ;Use main screen (see part 4).
050 LD A,2
060 CALL 32633
070 ;Point HL to PL@SS.
080 LD HL,23831
090 ;Check bit 5. If zero, then jump
back. This looks like
100 at would loop forever but
remember that the interrupt
110 isn't being used whilst this
program is running.
120 loopBUT B,JPL
130 JR 1loop
140 ;Get the ASCII code of the key
pressed into A.
150 LD A,(23860)
160 ;Say 'key not pressed' any more.
170 RES 5,HL
180 ;Print the character.
190 RST 16
200 ;Loop back.
210 JR 1loop

Now the SAM, which is a far easier board to work with. If you have a version 3 technical manual then you can see the routines I'm using on page 41. If you haven't then get one!

To read a key you should use CALL E982. The sub routine returns with the

zero flag set to 2 if no key was pressed, or NZ and the code of the key pressed in the A register. Look at program 2 for an example of how to use this, and compare it to program 1.

010 ;PROGRAM 2: SAM keyboard read
using CALL E982.
020 ;Start 32768, end 32789, length
13.
030 ORG 32768
040 ;Use main screen.
050 LD A,2
060 CALL E982
070 ;Scan the keyboard. If 2, no key
pressed, so jump back.
080 loopCALL E982C
090 JR 2loop
100 ;If NZ then the ASCII code of the
key pressed is in A.
110 ;Print the character.
120 RST 16
130 ;Loop back.
140 JR 1loop

Or, you can get the computer to wait for a keypress, by using CALL E98C. When a key has been pressed the sub routine returns with the code in the A register (so you don't have to worry about checking if a key is pressed or not). See program 3, and compare it to 2 and 1. Here the computer takes care of the delay and keyboard repeat automatically.

010 ;PROGRAM 3: SAM keyboard read
using CALL E98C.
020 ;Start 32768, end 32780, length
13.
030 ORG 32768
040 ;Use main screen.
050 LD A,2
060 CALL E98C
070 ;Scan the keyboard, waiting for a
keypress if needed.
080 loopCALL E988C
090 JR 1loop
100 ;The ASCII code of the key
pressed is in A. Print it.
110 RST 16
120 ;Loop back.



130 JR loop

Or (b), you can use the Spectrum method. This has the advantage of using the keyboard buffer (which you don't find on a SAM). As an example, load up something like SC Assembler, return to BASIC, and edit one of the really long lines. Press the up cursor to move to the end of the line, then type something really fast, and take your hands off the keyboard. You can see that the computer catches up with you. This is keyboard buffering: The computer stores up the keypresses and waits for your program to read them out as soon as possible, useful if your program is fairly slow (like the SAM editor when it has half a screen to handle). Try program 4 to see this in action. If you want to clear the buffer use CALL \$B66 in your program.

040 PROGRAM 4: SAM keyboard read using Spectrum method.
040 Start 32768, end 32797, length 20.
050 ORG 32768
060 Use main screen:
060 LD A,2
060 CALL 20112
070 rPoint HL to FLAGS
080 LD HL,23611
090 rCheck INT 5 IF zero, then jump back. Remember that 100 interrupts are running.
110 lea pBIT, 5(HL)
120 JR 2loop
130 rGet the ASCII code of the key pressed into A.
140 LD A,(23560)
150 rSay "key not pressed" any more
160 RES S,(HL)
170 Print the character
180 RET
190 Loop back
200 JR loop

Five, but this is just like the INKEYS instruction. What machine code games are famed for is their ability to read more than one key at once. First we are going to return back to ports. We've seen the border, sound, and tape ports. Now we want to read the keyboard, which is done by reading (you guessed it) the keyboard port.

KBOARD port 254, Controls keyboard and tape input.

D-4: Keyboard block
6 : Unused on Spectrum, light pen input on SAM.
6 : Tape input (ear).
7 : Unused on Spectrum, screen off indicator on SAM (not XMM0 as described in the technical manual on page 21).

Port 254 is used here (again). Although we are using the same port number as the border and sound, the difference is that we are reading, not writing. Why won't the keyboard give its own port number to make things nice and clear? It usually takes a different circuit to check for each port number, so if you cut down on the circuits you cut down the price, and simplify things.

How do you cram the entire keyboard (40 keys on the Spectrum and 72 on SAM) into just the 5 bits the port allows us to use. The answer is you don't. You split the keyboard into groups of five keys (called blocks), which just leaves us the problem of telling the computer which block we want to use.

Here the BC register comes in handy. The C register is loaded with the keyboard port number (254), and the B register holds the block number. Each



block is given its own bit, so we are because this command can only deal with single byte port numbers. Instead

| | | | | | |
|----------------|---|---|---|-----|------|
| Block number 4 | 3 | 2 | 1 | 0 | CAP |
| 11111110 | V | C | X | Z | IN |
| 11111111 | S | F | D | Y | OUT |
| 11111000 | T | R | E | W | A |
| 11111001 | S | 4 | 3 | Z | 0 |
| 11111010 | S | 7 | 8 | 9 | 1 |
| 11101111 | Y | 0 | 1 | 0 | 2 |
| 10011111 | H | J | K | L | DATA |
| 00111111 | S | R | M | SYN | SPC |

the IN (C)A command is used. Thus reads the port which is currently in the BC register (although it looks like just the C register from the way the command is worded, but not to worry).

You may be able to see some kind of pattern. If you read the description in the Spectrum manual (chapter on IN and OUT), it doesn't make a lot of sense for anybody who doesn't have a 40K rubber key Spectrum, and SAM owners don't get any description, which is why I typed the whole lot out (at great expense).

And any Spectrum owner who has a + or above will probably be puzzled at the lack of the special control keys which are on the left hand side. The answer is there are none! They are simply a combination of SHIFT and a number key, which is why many games with redefine keys treat them as one or the other. But SAM control keys are not combinations of SHIFT and number keys.

Meanwhile SAM owners are missing another 32 keys! The keys I've just described are the main keys you need - the other keys are accessed in a slightly different way which I won't go into here (because space is limited).

To tell the computer which block we need to read we must use port numbers which are greater than 255. This means that the simple OUT (port)A or IN A(port) will not work,

It is at this point I have to explain how register pairs work. You know

that you can join two 8 bit registers together to allow you to form 16 bit numbers. So clearly one of the paired registers takes the part of bits 0 to 7, and the other of the paired registers takes the part of bits 8 to 15. Which one takes which part though? The processor decides that for us - the first register in the pair (eg. B in the BC register) takes the part of the 'high' bits, and the last register in the pair (C in this case) takes the part of the 'low' bits. This means that the value in the B register is shifted up the 16 bit number by 8 bits. If we want to shift bits around the byte we can multiply and divide. So to shift up by 8 bits we multiply by $2^8 = 256$, and to shift down we divide by 256. So if you did a LD BJ : LD CJ and found out the value in the BC register it would be $1 * 256 + 4 = 260$. If you did LD BC(SPC) then you would have 54321 divided by 256 which is 212, and the remainder in the C register which is 49. I hope it makes sense. I'm sorry, but that is the clearest way I can think of to explain about how register pairs store numbers (which is why I put it off in the first place).

Anyway, the computer will expect the keyboard port number in the low

register and the block number in the high register. This can be done with LD once. Once the registers are set up we can use IN A[C] to read the port. The keyboard is read in the A register. Ignore bits 5 to 7 (these aren't important), and concentrate on bits 0 to 4.

These bits are set if the key isn't pressed, and reset if they are pressed, the reverse of what you may expect. You can then test them with the INT command to check for a specific key and act on the result. See program 5.

010 #PROGRAM 5. Keyboard read using keyboard port. This 020 waits until keys B, Y, and E are held down together.
030 Start 32768, end 32774, length 7
040 ORG 32768
050 ;C holds keyboard port number.
060 LD C,254
070 ;B holds the number of the block with key B in.
080 JloopD B,3200000000
090 ;Read that block into the A register.
100 IN A[C]
110 ;If BIT 4 of A is SET then B is not pressed, so loop
120 ;until it is.
130 BIT 4,A
140 JR NZ,Jloop
150 ;Now do the same with the Y key.
160 LD B,2110000000
170 IN A[C]
180 BIT 4,A
190 JR NZ,Jloop
200 ;Now the same with the E key.
210 LD B,2111110000
220 IN A[C]
230 BIT 7,A
240 JR NZ,Jloop
250 ;If the program has got to here then B, Y, and E must
260 ;be held down. So return.
270 RET

You can read more than one block at once. Say you wish to use the entire C254 and LD B block number. Once the blocks are read, and the keyboard bits are merged together. So, if you get an answer of X000, it could be SPACE or CAPS (look at the rightmost column and the two rows of X000000 and X000000).

You can read the entire keyboard by LD BQ. One main use for this is to wait for any key to be pressed. See program 6. Here we use the AND instruction which filters out unwanted bits, and the CPL instruction which 'Taps' the bits (sets all reset bits and resets all set bits). It's not really important how this routine works (yet) but just remember it all the same.

010 #PROGRAM 6. Wait for any key to be pressed.
020 Start 32768, end 32779, length 12
030 ORG 32768
040 LD C,254
050 ;All keyboard.
060 LD B,0
070 ;Read key into A.
080 JloopA A[C]
090 ;Set all reset bits and reset all set bits.
100 CPL
110 ;Ignore bits 5 to 7. If no key pressed then all of bits 0 to 4 will be reset.
120 ;0 to 4 will be reset.
130 AND 2000000000
140 JR Z,Jloop
150 RET
160 ;Remember that you are going to have to tap the ENTER key very lightly after the CALL command for this to work, otherwise it will return straight away.

Now there is a problem. In this case it is to do with the design of the



computer, and there is nothing you can MODE 23617 do about it. The keys pressed in one This variable tells the computer which block may affect the result from the cursor to print, although it must be keys of another block, which can be a pain from within a program, or before problem with many two player games an INPUT statement to have any effect, as it is reset while in BASIC's editor.

10 REM PROGRAM 7; see the effect of keypresses on ports.

20 PRINT AT 0,0, FOR a=0 TO 7, LET port=254+257*(255-2+a), PRINT port, TAB 6, IN port, NEXT a, GO TO 20

See if you can write a program to detect Q, A, O, P, and M or SPACE as fire, and pole addresses in the memory which can be read by a BASIC program, so you can have a BASIC game which reads these addresses and allows you to detect more than one key at once. I'll give possible solutions to this and the quit key problem next time. Bye.

Once again, I'll just remind you about the fact that the "hash" sign always comes out of our DTP as a # sign - so watch out for this little quirk when typing in listings!

Right, I'll now hand you over to the capable hands of Steven Kemp, with another:

Program Box

Steven Kemp

Serious Readings System Variables 6

This issue, there's a short piece about the "MODE" System Variable for you to read about!

Most of the acceptable values can't be used, as they cause undesirable effects, eg poking with a number between 4 and 129 will lock you in Graphics mode.

The following program shows the general use:

```
10 FOR r=1 TO 4, READ a
20 POKE 23617,a
30 INPUT "Type something in .."LINE
40 NEXT r
50 DATA 252,222,156,161
```

Of course some experimentation is necessary to choose your own values. Just poke in all the numbers from 00-255 in a loop, inputting as you go.

Thank you Steven. Next issue, we'll have a very useful program from Steven, to help you investigate the contents of the Z80 registers.

What I would like to hear from all Spectrum owning readers, is details of any drive systems owned. Why? Well, there is a good possibility that we may be releasing some listings that we have printed in the past for the Spectrum - and some we have not used yet - on a Spectrum compilation disk. So, yet me know via ZAT, and we'll see if it's worth it.
Until next time, DL.

Meanbiz

DARREN BLACKBURN AND
ANDY DAVIS AND CO

Spectrum Hacking and Tape Loading
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and paste from this article granted.

Before I begin, neither I nor Darren require the permission hacking for financial gain and private copying. It is queer and foul the authors of books and illegal and these types of hackers are programmers, a little lame, cause software writers and us indirectly kill support for a particular machine. The goal of business hacking is only to gain knowledge of how programs are made and how to disassemble the authors method of manufacture. The old adage, "Theft never prosper" could also include hacking. I must admit that the feeling you get when you break a PDA or crack a seemingly unbreakable locker is nothing short of ecstatic, but in the long run it puts you off the game forever. It's not worth playing a long adventure if you're solved at before it's over?

In this article, I'm not going to do a Jon North and start a series featured hacker, it's I've already got too. The way is to alter a system variable difficult and boring for new users, to make the spectrum perform a NEW but if you're reading Jon, it was a command which quarantines root to first disk sector and the sorry 7% RAM, but if you haven't CLARED out of. You could always get a job your code (protected it from with Z80 or Albrecht). Instead, I'll introduce the M6809, then all is lost. Give a quick rundown of tools of the So, first you must find a way to trade and move onto a landscape of PDA 25770000 and 25771100. Then Survival computing. The Spectrum you must alter the program counter (PC) to 4000 or 3117 hex. Now, the computer will need to begin leaving all code from 25000 intact. Loading multiface, which gives you total body just over 640 depending on access to every byte of RAM whether support for a portion like this, I may use have 48 or 128. Multiface also continue giving more support for new come with an extra 16 of RAM which makes out there! Write to me or the allows extra hacking software to be either new and why what you think installed. There are 15114000. An infinite loop under and 16000. A Spectrum Tape Loading System driver/loader. Any user with a multiface usually makes no use of the The flagship of loading systems on all extra 16 memory which is called R but machines must be the Spectrum switched on if makes your computer suffer. The way it allows you to either 16k or 192k. Look out in how the form and the bars which figure issues for an article called appear on screen when loading tell More from your Multiface" which can you an encyclopedic full of also be found in Albrecht.

are a DISASSEMBLER, a program which will "disassemble" the code into 6502 machine language, text or pictures, so you can read text or the line which determines how many lines you start with. Sadly, the more features a disassembler holds, the more memory it takes, and seeing as how a days new games take up every scrap of RAM, you won't lose some programs. The trick is to first load the disassembler into the lower half of RAM, say 30000 and disassemble from 40000 to the end, then reload the game and put the assembler at 50000 and disassemble 30000 to 40000. A little messy I agree, but it's the only way. It's all very well saying "load the game and then load a disassembler" but the biggest problem is how to break into a program. Multiface owners can use their FCB function or 68 owners can get a piece of code which is installed into the printer buffer (27296-28200) which allows a new BREAK key to be defined.

Another problem is that new games take up all the available memory, using from 25500 to 32768 which should be unused to allow you to return to BASIC. So if this is occupied, the computer will still crash. There is one way to get into memory, and that is to alter a system variable using from 25500 to 32768 which should be unused to allow you to return to BASIC. So if this is occupied, the computer will still

crash. There is one way to get into memory, and that is to alter a system variable using from 25500 to 32768 which should be unused to allow you to return to BASIC. So if this is occupied, the computer will still

crash. The flagship of loading systems on all extra 16 memory which is called R but machines must be the Spectrum switched on if makes your computer suffer. The way it allows you to either 16k or 192k. Look out in how the form and the bars which figure issues for an article called appear on screen when loading tell More from your Multiface" which can you an encyclopedic full of also be found in Albrecht.

Other programs which come in useful Standard Loaders

This is usually the Wheeee-Blop basic loader. You will usually find a (Please) Wheeee- chugga chugga etc few data statements PROFING numbers. This is the system the basic load and into addresses or a short standard tape uses. In fact, when you type pages of code before all the save or load, you are not loading in headers code. Unwritable the address to where this data is going usually the RAMD address or the

The short "Wheeee-Blop" is a 17 byte program header which tells the tapes LD IX is used and the address spectrum what to expect next- how and the same with LD DE LD IX is long the next piece of data is, where used to store the start address of it has to go, what type it is, how where to put the code and LD DE is long it is and finally a file name used for the length \$0F means load These are simple to check and you in the code and not writing it. LD A/F can pick up a tape header reader or LD A/2% or XOR A means that the headers file is code and not basic and CALL 0596 Hex or CALL 1196 means call the piece of code in ROM to load it all in.

Headerless Loader

This is the same as above, but some games may have this "program" doesn't feature the "Wheeee-Blop" in twice- time to load in the screen part. This system is a little more and code for the code. To check, the complex as it won't load in by a screen will be LD BX,16984 and LD standard basic LOAD" command. It 0F,6902. Some authors cheat and load needs all the information set up the screen to high memory (like before hand. It also doesn't have a 40000) and then move it down to filenames which makes finding a 16984 later. You'll usually know which particular part difficult.

Here is a piece of machine code and BASIC, you'll get a JP address, which would load in a screen picture. This is like a RAMD USA, and starts without a header. You can try this by the game off if you alter the CALL finding a screen picture from a game to a RET CD 10 09 or 20% to 2011 by typing LOAD" and loading in it will return to basic. Then you can first part. Then when it does the performs the RAMD LSR space after "Wheeee-Blop" for the screen, stop maybe looking around with a the tape AFTER the "Whee-Blop" disassembler or putting poking at the computer and tape or PGPF than Turboload into address:

400000,

| ASSEMBLY | HEX | DECIMAL |
|-------------|-------------|-----------------|
| ORG 40000 | | |
| LD | F3 | 243 |
| 10 06,16984 | D0 21 00 40 | 271 013 000 064 |
| LD DE,6902 | 11 00 1B | 117 000 0/7 |
| XOR A | A8 | 178 |
| CALL 1396 | CD 56 05 | 205 086 005 |
| RET | C9 | 201 |

These are the same as above but go faster. The code to load them in wait in ROM, so has to be in RAMD usually high up. The principle is the same as above though a piece of code with a header is loaded in and RAMD USR'd. DC and DE are still used, but instead of CALL 0596 or CALL 1196, it's usually much higher to the same piece of code in ROM but with some variables altered to read in the data much faster. If you've

Now, RAMD USA among and play the disassembled the spectrum loading tape. The code should miraculously be routines at 1000 decimal, you can interrupt and load the screen. Quite a compare them with the turbo code few games use this method to step higher up in RAMD standard headers from being put through a header reader and being Firebird Loader copied. But the way you can find where it's going is to look at the in my op code, the most reliable header

ever written for BBCB! The whole operation is to load in a short piece of code and repeat the batch of it. Finally it tells you how to read sheet music. It's well written, so it is decent in quality. It tells you to record and do it again. Even though the little blocks are headerless, they are clearly numbered. The only bad part about this is that it takes absolutely ages to get a song loaded in.

Well, that's about all the different loaders around today. Blipblocks and Speedblocks loaders are just variants of bubbleloaders. There is a scroll-load around which I created in 1990 which is like a Turbo loader, but the revert to keyboard. As you have opposite which loads data in really slowly, rather than fast it's so slow it would take about 20 minutes to load in a 12th game, so imagine a 512k AM game / hours 20 minutes! Gosh, it's no wonder people turn to tape drives!

So until next time, or sooner if you want to drop me a line boy! Address me sensible PGP no long as you supply a block PGP and "AM". Please enclose an SAE for a reply. The address is: AL CHMURSKI 117/111 R. 62 Little Barn Lane, Woodhouse, Sheffield S13 7EN

Thank you for that interesting and useful article Andy. Now it's time to get over to Daniel Cannon for a review of the long-awaited AM music making screen fill up with a grid. The reason

How many times have you tried to write your own score for your AM songs after listening to something like a Masters of Music music demo? How many times have you failed? Probably your answer will be the same as mine - every time. So as full of fun, released ordered a copy of The Sound Machine from AM. Three months later and I finally received it - which is why (spelling version) of Firefly. The reason is slightly late. Never mind though. The package includes a program disc, a book disc to save your music on (one fourth), and 70 pages of DTP produced instruction book.

The manual goes through how to use the grid up and down by clicking the this program right from the beginning on the first page. The x position is great detail. First it explains how determines how far into the tune the to load up the drum tuner, and how note will be played. You can scroll to modify them. Next you enter your the grid left and right as the length

own tune, then it gives you the start of a well known tune and you have to finish it off. Finally it tells you how to read sheet music. It's well written and it explains all the things you'll need to know.

Upon loading you are presented with a picture of SAM being extremely funky with a guitar-synth and an oven bar across the top. Using either mouse or QWERTY keys to click on the bar will give you 3 options - the music editor, the waveform generator, or reset the computer.

Because I have no mouse I had to resort to keyboard. As you have probably guessed, holding down right, for instance will move the pointer to the right. On flesh the pointer will gradually increase in speed as you hold the key down, so it is a fairly quick process to move from one side of the screen to the other. With SAM things are different - the pointer scrolls across the screen at a fixed rate, which can be slightly irritating. However I'm a fairly impatient kind of person - you might not find this a problem.

Anyway, Clicking on the note iron will load the music editor. First you will be presented with a few doc lines and comments. Hold, now, sir, etc... Clicking on the iron bar again will put you into the music editor proper. You'll see a large proportion of the screen fill up with a grid. The y axis of the grid is used to measure the pitch of the notes, and the x axis is used to measure time. To the left of the grid is a keyboard which you can look up your notes on so that you know which is coordinate in the grid provides which note. Below the grid is a cluster of keys. Below this is a row of 7 other keyboard. 'Light' being played to show you which notes

Using the grid you click on where you would like a note to appear and it appears. The height of the note on the grid determines it's pitch. As the whole range of octaves won't fit onto the screen at once, you can scroll

this program right from the beginning on the first page. The x position is great detail. First it explains how determines how far into the tune the to load up the drum tuner, and how note will be played. You can scroll to modify them. Next you enter your the grid left and right as the length

of your song increases. You can also queue in case you want to play your note for decisions to be placed along own sound effects whilst the music is playing - you can make out up to 32 note (with tape music) channels and replace them with your own or 4 time bars so that you don't own in game sound effects both time loose your place, it's all here and requires 4 pages of RAM however, easy to use (if complicated to which can put a crimp on your explain), but a little slow if you are machine code programming if you want to fit it in a 720K computer. However

Please bear that there's a tiny

compressor out on PD already.

Each note can be played using one of 10 waveforms (instruments), and all 8

channels can be used at the same time. One problem is that you cannot play two notes straight after each other which are of the same pitch in or Archimedes, because basically, in the same channel. So if you wanted a Soundtracker full, Soundtracker is a Da Da Da Da Da, you would end up with similar program for these computers disastrous. This problem can only be which doesn't look as pretty and isn't solved by switching channels between as user friendly (not by a long way). Such note played which is a bit of a pain.

You can copy blocks of notes around the tune, share patterns of notes which can be repeated later at different pitches (called macros), play variations of the song using something skin to the controls you would find on a tape deck, and test your creation by cutting out channels to see if one channel has the beat wrong for instance.

The waveform editor allows you to create the different types of sounds you want in your tunes. For example, you may want a piano and a drum in your tune. By altering the amplitude (volume) and frequency (pitch) of each note played slightly you can do this. To make a piano like sound you would set the amplitude to start off low and die down slowly. You could change the pitch slightly as the note finishes. A drum sound would start off louder than the piano and die down quickly, and it would use white noise (a sound like an unturned radio) at a low pitch.

The big but about the waveform editor is the length of the waveforms you are allowed to create. Waves can only last for around half a second - no more. This tends to ruin any chances of things like snare drums and guitars which last longer than this. The other prob is that you are only allowed 10 waves per tune - not a lot if you think about it.

Full instructions are given so that you can use the music in BASIC or Machine Code. Special provisions are

In reviewing this program, I think that I have to make comparisons between Soundtracker (for the Amiga) and Soundtracker (for the Archimedes). In the same channel. So if you wanted a Soundtracker full, Soundtracker is a Da Da Da Da Da, you would end up with similar program for these computers disastrous. This problem can only be which doesn't look as pretty and isn't solved by switching channels between as user friendly (not by a long way). However, it has a method of entering notes which is fairly fast (you type the notes in on the keyboard), and it allows waveforms which can last up to 10 seconds or more.

I don't know what to make of this. Yes it is a very good program, yes you will have fun using it, yes it is very useful. But maybe I am too used to Soundtracker (and too biased?) - I find the process of entering notes a bit slow (I would prefer to type them out on the keyboard) and I think the limitation on the length of the waveform is too much to make them really useful. However this is still a good program which you will like. If you buy it, despite these little quirks.

Rating:

Usefulness: 90
Presentation: 90
Compatibility: 54M
Overall: 80

Note: We've just heard that there may be ANOTHER music package available soon for SAM. No details yet, except that it sounds (again!) as though it should be something special!

That's it for this edition. Next time, we hope to hear a "Quake" or Star Fleet, KP-Disk, and maybe a look at one of the 2 new Arcade Development packages for SAM. Additionally, we may take a look at Microsoft BASIC - the excellent Compiler for the Spectrum. Until then

SPLIT SCREENS

by DAVID ADDY

Heavy Split Screens return! After the success (I hope) of the last one I'm here to another and this time I'm dealing with 3D screen games. What? I hear you say. Don't you ever have 2D screen games of course. Well consider. Let's take a look at the diversity.

THE GEMINI GAME (Amiga/Amstrad/Amiga CD32/Amiga CD32 CDROM)

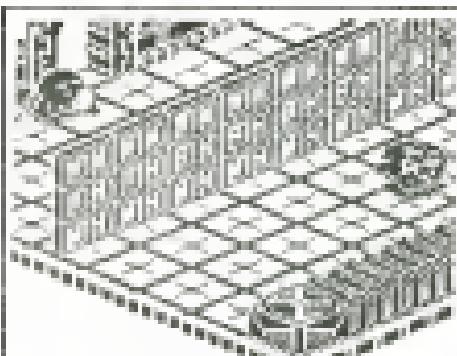
How hard to describe really. They sort of look as though they are drawn in perspective, but they aren't. You usually have to control a "real" character of some form who doesn't control in a "real" way.

It's best explained by a few examples. Rogue Trooper (a popular hybrid), does atop character from ZED A.D. version Batman (the last game in the trilogy), Batman's World, Mortal Kombat Movie and many more besides. Even these days they prove as popular as ever.

So there you have it. It's good that a format that's been around for so long is still being done so well. For example, Day of the Tentacle the classic series. In fact that's a very good example, so good that I'll use it in the comparison. So far all other hybrids game well there's only one other's really a hero to the *Age of OverHeels*. So the games we've got the table the stakes are high (the stakes is in the screen) how do they compare?

I fully. Head Over Heels. The game was written for the Spectrum by Ian Blamey and Eddie Woodward. Yes those names are familiar, they're the same people who brought us the original Lemmings game, as well as Match Day and Match Day 2. After the success of Lemmings the kids amazingly produced a game that was even better by using the excellent idea of letting you control two

characters rather than one. The characters names? Why Mr Head and Mr Heels of course. The test was that the two (yes it was a side game) had been separated by the evil Blacktooth and locked away for good. Their task? To escape and up liberate planet Earth from Blacktooth's crown and escape to the planet Freedom, where they come from.



Head Over Heels

Easy? I think not. After buying the game I spent about 2 hours a night playing it for the next 7 weeks (longer on weekends). This game ruined my social life destroyed my sanity made me pull out my hair in frustration but I completed it. There's enough puzzles to keep even a Monks master like myself going for ages.

On and back to that tent there's the benefit to be gained from "joining" the two pals up. You see Head can jump a long way and change direction mid-air but he's also slow. Heels is speedy enough, but pretty crap at the jumping department. Time is needed to master controlling the two of them but that's not all you need to do for when the happy chappies get together their powers combine. To put nicely Head sits on Heels' head and the two of them join together as one. This makes all

parts of levels a whole lot easier and so on.

To sum it up, undoubtedly the best new game for the Spectrum. More challenging than something very chuffing indeed, and more addictive than Colombia. Buy! Buy! Buy!

But wait! This isn't a review, it's a comparison Gaurdiel 2?

Now if you haven't heard of the Gaurdiel series of games then you don't exactly exist. It's an simple fact that after the popularity of the two strangely shaped space invaders (called Gaurdiel and Gaurdiel 2 respectively) smaller versions were inevitable and equally popular.

They did however do about everything do wise with the overhead perspective so when Gaurdiel 2 came along it kicked up a bit of a ruckus with the usage of the 3D isometric game format.

The game is basically similar to the original but nearly all the aspects have been taken further. There is the extra dimension for a start. Also you now have eight characters to choose from rather than the original two (new breeds are Neptune, Polar the Pachman (and Blue Peter dog), Draestr the traddem and Blizzed the imaginatively named Iceman and a pilot).

Finally not a pilot? Yes a pilot Captain the Lord of Drerry returning after his bit trouble on the island of Capro. He would never no no no one fail to do something about it. You'll never guess who. You'll guess and possibly a buddy if you're lucky enough to have any friends.

The main difference between the two games is how about to keep up at full tilt in H-O-MI you're puzzle solving most of the time but whereas in G2 it's much more of your traditional dash at everything type of game. Also G2 though made up of 16 different levels cycles fairly in 8 different directions whereas H-O-MI is made up of lots of meandering routes.

Pointing at these points the graphics in G2 are much bigger than those in H-O-MI but that's not a dissimilarity H-O-MI just actually runs that game to look at it they haven't really got much in common at all except in the 3D aspect. And like I said

Well a quick run up. Both games make good use of the 3D aspect by letting you in different ways that don't have to be common and so to celebrate my geek I'll say that this was all planned to show just what a variety of games there are of this type. Head Over Heels certainly doesn't show its age and neither does Gaurdiel 2 because it is a very old thank you.

The Manic Miner Competition!

With the release of the new version of the classic game Manic Miner on the Amstrad CPC, here's a simple competition to win a free copy of the game, autographed by its programmer and original Tech Editor of ZAP Matthew Smith. The first prize winner will win the game and a second prize winner will win 5 blank discs.

To win either of these prizes, just answer these short and sweet questions:

- 1) Who wrote the original Spectrum version of Manic Miner?
a) Matthew Smith b) Matthew Holt c) Matthew Smith.
- 2) Which of these 'screen titles' from the Spectrum version was never used?
a) The Menagerie b) Return of the Alien Kong Beast
c) Return of the Jedi.
- 3) Which of these 3 games did the author of MM NOT write?
a) Manic Miner. b) Jet Set Willy. c) Jet Set Willy 2.

Send your answers on a postcard or a sealed envelope to MANIC-MINER COMPETITION, 109 CHILTERN GARDENS, BAWTRY, EAST YORKSHIRE, YO21 1QJ.

Entries need to via the house mail be received by June 21st. Winners announced on ZAP 15.